REMARKS/ARGUMENTS

The Title is amended to clearly indicate the invention.

Claims 1-12 were pending at the time of the Office Action.

Claim 1 and 7 are amended to clarify nature of the image processing device. Support for the amendments is found throughout the specification, for example, at paragraphs [0006], [0025], [0028], [0035, [0054] and [0057].

Claims 2, 8 and 12 are canceled.

The rejections of claims 1, 3-7, and 9-11 as anticipated or obvious is respectfully traversed. The cited references fail to teach or suggest all elements of the current claims.

In particular, the Office Action is of the opinion that Shyu discloses "a whole luminous area of an image is divided into a plurality of continuous divisions and continuous change in brightness in each of the divisions is emphasized." However, Shyu did not disclose that the luminous area of an image is divided into continuous divisions and continuous change in brightness in each of the divisions is emphasized. Shyu discloses that when a reference exposure value Xe exists at a set point between values X1 and X2, the input range between X2 and X 1 is expanded to a range between X2' and X1' without changing the reference value Xe in order t o decrease slope and a contrast of a picked- up image. In other words, Shyu describes that the contrast of an image taken by an image pickup device can be improved when the range of input signals is decreased without changing the range of output signals. Therefore, Shyu describes that a presumed parameter memory saves the thereon one or more predetermined specified slope values "m". Therefore, from the above description, the Shyu system outputs an image at different slopes m and does not disclose dividing an image into a plurality of luminance areas as disclosed in the claimed invention. Namely, the Shyu system is quite different from the device of the present claims.

In contrast, the image sensor according to the present claims invention has a logarithmic output characteristic to widen its dynamic range, which comprises a matrix of light sensor circuits each of which represents a unit pixel and works in such a way that sensor current corresponding to a quantity of incident light is produced and converted by a photodiode (photoelectric converting element) into an electric voltage having a logarithmic characteristic in weak inverse state by using the sub-threshold region property of the transistor and, then, a sensor signal corresponding to the voltage signal is produced and output.

The image sensor possessing a wide dynamic range of its logarithmic output characteristic can take an image of any subject with a wide range of brightness from a very light portion to a dark portion but cannot assure the sufficient contrast of the image because the brightness is logarithmically compressed (see paragraph [0004]).

Accordingly, the claimed invention provides an image processing device which can realize easy and prompt processing an image taken by the above-described image sensor having logarithmic output characteristic in such a way that a whole luminance area of the image is divide into a plurality of continuous divisions by using an output conversion table for converting pixel data output from the image sensor and a change in brightness in the plural luminous areas is continuously emphasized to obtain the image emphasizing variations I brightness like a contour line.

Then, a procedure of determining the brightness of each portion of the image taken by the image sensor is conducted as follows.

Gradations of respective portions of the image taken by the image sensor and processed by using the output conversion table, which has been enhanced like the contour lines, are first estimated from the preset data of the output conversion table. The luminous intensities of respective portions are then determined by comparison of their luminance with gradations estimated from the processed image based on the previously determined output characteristics of the image sensor.

All of the above-described constituent features of the device of the present claims are not disclosed in the cited document Shyu. Therefore, the present claims could never be made based on the Shyu disclosure. As all elements of the claims are neither taught nor suggested by the prior art, the claims are not anticipated or obvious.

In view of the foregoing amendments and remarks, Applicants submit that the present application is in condition for allowance. A Notice of Allowance is therefore respectfully requested.

A Petition and fee for a one month extension of time is being submitted herewith.

No other fees are believed due. However, the Commissioner is hereby authorized during prosecution of this application and any related appeal, to charge any fees that may be required (except for patent issue fees required under 37 CFR §1.18) or to credit any overpayment of fees to Deposit Account No. 50-0337. Please ensure that Attorney Docket No. 7272-113/10302986 is referred to when charging any payments or credits for this case. If an additional extension of time is required in connection with this paper, please consider this a Petition therefor and charge any fees required to Deposit Account No. 50-0337.

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Respectfully submitted,

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